

Overview of ball material used in trackball :

GK16, GK25, GK38, GK50, GK75 opto mechanical trackball, black : **Phenolic resin**  
GS25, GS38, GS50 opto mechanical trackball, stainless steel : **AISI 440C Din 1.4125**  
O38, O50 optical trackball : **Epoxy resin**

## Some info on resins:

Both Phenolic Resins and Epoxy Resins belong to a group of materials called thermosetting plastics (as opposed to thermoplastics), this means that they are created by an irreversible chemical reaction of their constituents and can never be softened again by reheating (eventually they will degrade at higher temperatures). Thermosetting plastics are generally used for high temperature applications and as electrical insulators because of these properties.

Thermosetting are generally harder but more brittle (less tough) than thermoplastics. Epoxides and Phenolics have similar properties, both can have colour additives but epoxies can be made in a transparent/clear form whereas phenolics cannot. It is thus necessary to use epoxy resin rather than phenolic to provide the outer transparent layer of the optical balls.

The relative density of epoxy is slightly less than phenolic, the tensile strength is about the same (this largely depends on the addition of any fillers), the epoxy resins tend to be more elastic under load (exhibit more % elongation) the impact strength is about the same and the epoxides are capable of withstanding higher temperatures.

## Stainless steel AISI 440C

Stainless steel is a durable, low maintenance material with a good cleanability.

The 440 class is a magnetic material, resistant to either low and high temperatures, corrosion and water (except Sea water). The 440 class is applicable in the food industry.